

CLAIMS

What is claimed is:

1. A load monitoring and management system, comprising:
a plurality of sensors associated with one or more loads; and
a load control component , wherein the control component has a waveform analyzer component which receives data from the plurality of sensors and determines power data that is utilized by the control component to determine the rate of energy distributed to the load.
2. The system of claim 1, wherein the control component and the waveform analyzer component are connected and communicate *via* a backplane.
3. The system of claim 2, wherein the waveform analyzer component is located on a printed circuit board.
4. The system of claim 3, wherein the circuit board contains a processor and memory.
5. The system of claim 4, wherein the processor time stamps data as it is received and stores it in memory.
6. The system of claim 2, further comprising an input component that converts input signals to backplane signals thereby facilitating communication of input signals to components connected to the backplane.
7. The system of claim 1, wherein the load control component communicates with other load control components to determine a load control strategy for a plurality of loads.
8. The system of claim 7, wherein the control strategy is determined at least in part upon data captured by the plurality of sensors.

9. The system of claim 8, wherein the sensors collect data relating to the health of a load.
10. The system of claim 9, wherein the waveform analyzer component utilizes the data captured by sensors relating to the health of the load to determine power data.
11. A machine load metering and management system comprising:
 - a plurality of sensors associated with one or more machines;
 - a programmable logic controller (PLC) that collects data captured by the plurality of sensors and determines the power to be distributed to one or more machines based at least in part upon metered data generated by a waveform analyzer component utilizing the data captured by the plurality of sensors.
12. The system of claim 11, wherein the waveform analyzer component is a PLC based card.
13. The system of claim 12, wherein the PLC based card is located in a PLC backplane chassis.
14. The system of claim 12, wherein the PLC based card contains a processor and a data storage device.
15. The system of claim 14, wherein the processor time stamps data as it is received and stores the data in a sequence of events table.
16. The system of claim 11, wherein a PLC processor module determines how power is distributed to one or more machines.
17. The system of claim 16, wherein the waveform analyzer component is located inside a PLC processor module.

18. The system of claim 17, wherein the PLC processor module determines how power is distributed base on an optimization algorithm which has input parameters relating to business concerns, the health of each machine, the power consumed by each machine.
19. The system of claim 17, wherein the PLC processor and the waveform analyzer are connected and communicate *via* a backplane.
20. A method for metering a load comprising:
 - receiving data from one or more sensors associated with one or more loads;
 - transferring the data from one or more sensors to a backplane device;
 - time-stamping the data from individual sensors as it arrives;
 - storing the time stamped data in memory; and
 - utilizing the time stamped data and energy algorithms to meter a load.
21. The method of claim 20, wherein the sensed data is limited to Volts, Amperes, and Watts.
22. The method of claim 20, wherein metering the load comprises determining total energy consumed by a load in a given period.
23. The method of claim 20, wherein metering the load includes measuring harmonic distortion.
24. The method of claim 20, wherein metering the load includes measuring a power factor associated with the load.
25. The method of claim 20, wherein the backplane device is a waveform analyzer component located on a removable circuit board.
26. A computer readable medium having stored thereon computer executable instructions for carrying out the method of claim 20.

27. A method for monitoring and managing loads comprising:
retrieving load data from one or more sensing devices;
deriving energy data using a microprocessor located on a printed circuit board
inserted in a slot of on a backplane and the load data received from the sensing devices;
determining a load control strategy based at least in part on the derived energy data;
and
controlling loads according to the control strategy.
28. The method of claim 27, wherein determining a load control strategy further
comprises communicating energy data over a network and collaborating with multiple
controllers to develop a distributed control strategy for a plurality of loads.
29. The method of claim 27, wherein load data is restricted to Volts, Amperes and Watts.
30. The method of claim 27, wherein the energy data comprises at least one of energy
consumption, harmonic distortion, and power factor associated with a load.
31. The method of claim 27, wherein loads are controlled by output devices connected to
the backplane.
32. A computer readable medium having stored thereon computer executable instructions
for carrying out the method of claim 27.